CLAIMS

I claim:

1. A method for maintaining quality of service for calls routed between a circuit switched network and a packet switched network, the method comprising:

determining that a call path for a call between a first device and a second device includes at least one segment over a circuit switched network and at least one segment over a packet switched network;

determining that the call path may be rerouted to bypass the at least one segment over the circuit switched network; and

rerouting the call path to bypass the segment over the circuit switched network.

2. A computer readable medium having stored therein instructions for causing a processor to execute the method of claim 1.

3. The method of claim 1, wherein the call path includes a first path for carrying bearer traffic and a second path for carrying signaling messages, and wherein rerouting the existing call path comprises rerouting the first path.

4. The method of claim 1, wherein determining that the call path may be rerouted to bypass the at least one segment over the circuit switched network comprises:

sending a message from a first element in the call path through a backward signaling channel for the call path, wherein the first element is located at a transition from the circuit switched network the packet switched network, and wherein the message

indicates that the call path transitions from the circuit switched network to the packet switched network at the first element

receiving the message at a second element in the call path, wherein the second element is located at a transition from the packet switched network to the circuit switched network; and

thereafter negotiating between the first and second elements to determine if the call path can be rerouted to bypass the at least one segment over the circuit switched network.

5. The method of claim 4, wherein the message includes an call reference that identifies the call between the first second and the second device, a hop count for tracking a number of packet switched network segments encountered by the message on the backward signaling channel from the first element to the second element, and address data that identifies the first element.

6. The method of claim 4, wherein the first element is an egress gateway, and wherein the second element is an ingress gateway.

7. The method of claim 4, wherein the message is embedded within existing call control signaling messages for the call.

8. A method for bypassing circuit switched network segments in a call path for a call, the method comprising:

receiving a first message sent from a first element in the call path to a second element in the call path, wherein the message is sent via a backward signaling channel for the call, and wherein the message indicates that the call path transitions from a circuit switched network to a packet switched network at the first element;

transmitting the message to a next element along the backward signaling channel;

sending a second message to the first element in order to determine whether a connection can be formed with the first element in order to bypass a circuit switched network segment in the call path for the call; and

starting a timer to determine whether a response to the second message is received from the first element within a predetermined amount of time.

9. A computer readable medium having stored therein instructions for causing a processor to execute the method of claim 8.

10. The method of claim 8, wherein the first message includes a call reference that identifies the call, a hop count for tracking a number of packet switched network segments encountered by the first message on the backward signaling channel between the first element and the second element, and address data that identifies the first element.

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11. The method of claim 8, wherein the second message includes a call reference that identifies the call, a hop count identifying a number of packet switched network segments between the first and second elements, and an identification of one or more media negotiation protocols supported by the second element.

12. The method of claim 8, further comprising:

receiving the response to the second message within the predetermined amount of time; and

negotiating with the first element to reroute the call path so as to bypass the circuit switched network segment in the call path for the call.

13. The method of claim 12, wherein the response identifies a media negotiation protocol supported by the first element, and wherein the media negotiation protocol is used in negotiating with the first element to reroute the call path.

14. The method of claim 8, further comprising:

receiving the response to the second message, wherein the response indicates a third element; and

sending a third message to the third element in order to determine whether a connection can be formed with the third element in order to bypass a circuit switched network segment in the call path for the call; and

starting a timer to determine whether a response to the third message is received from the third element within a predetermined amount of time.

15. The method of claim 14, further comprising:

receiving the response to the third message within the predetermined amount of time;

sending a message to the first element indicating that the second element is attempting to negotiate with an element other than the second element to reroute the call path so as to bypass the circuit switched network segment in the call path for the call; and

negotiating with the third element to reroute the call path so as to bypass the circuit switched network segment in the call path for the call.

16. The method of claim 8, wherein the second element is an ingress gateway.

17. A method for rerouting a call path for a call to bypass circuit switched network segments, the method comprising:

sending a message from a first element in a call path to a second element in the call path, wherein the message is sent via a backward signaling channel for the call, and wherein the message indicates that the call path transitions from a circuit switched network to a packet switched network at the first element;

receiving a response to the message from the second element; and

communicating with the second element to determine whether to reroute the call path in order to bypass a circuit switched network segment in the call path for the call.

18. A computer readable medium having stored therein instructions for causing a processor to execute the method of claim 17.

19. The method of claim 17, wherein the response wherein includes a call reference that identifies the call, a hop count identifying a number of packet switched network segments between the first element and the second element, and an identification of one or more media negotiation protocols supported by the second element.

20. The method of claim 17, wherein the message includes an identification of a first media negotiation protocol supported by the first element, wherein the second message includes an identification of a second media negotiation protocol supported by the second element, the method further comprising:

negotiating the between the first and second elements using the second media negotiation protocol in order to determine an alternate call path for the call that bypasses the circuit switched network segment; and

rerouting the call to use the alternate call path.

21. The method of claim 17, further comprising generating the message, wherein the message includes a call reference that identifies the call, a hop count for tracking a number of packet switched network segments encountered by the message on a backward signaling channel, and address data that identifies the first element.

22. The method of claim 17, further comprising:

receiving the message from a third element, wherein the message includes a call reference that identifies the call, a hop count for tracking a number of packet switched network segments encountered by the message on a backward signaling channel, address data that identifies the third element;

incrementing the hop count; and

altering the address data to identify first element.

23. The method of claim 17, wherein the first element is an egress gateway on an IP network, and wherein the second element is an ingress gateway on an IP network.

24. The method of claim 17, further comprising:

receiving responses to the message from multiple different elements in the call path, wherein the responses each includes a call reference that identifies the call, a hop count identifying a number of packet switched network segments between the first element and respective element that sent the response;

determining which response has a hop count that indicates the greatest number of packet switched network segments between the first element and the respective element that sent the response; and

negotiating with the respective element whose hop count indicated the greatest number of packet switched network segments in order to reroute the call to bypass the circuit switched network segment.